Industrial FINISHING

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Devoted to Product Finishing in the Factory

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Letters from Readers of "Industrial Finishing"

The names and addresses of firms or individuals whose letters and inquiries appear in this department may be had by writing this office, or letters addressed to them in care of this office will be forwarded promptly.—The Editor.

Flock Backed Mirrors?

Will you be kind enough to advise us if you happen to know of any patents already issued or pending covering the application of flock to the backs of mirrors? There are many kinds of flock, such as wool, cotton, rayon and silk, and also a long list of different kinds of adhesives. The adhesive (in liquid form) is sprayed on the backs of mirrors and then the flock is applied over the adhesive and allowed to dry. We have no knowledge of any patents, but have heard rumors that some do exist or have expired. Inasmuch as we are interested in manufacturing mirrors with flock backs, we would like to have some authentic information concerning patents, if any, which might bear on mirrors manufactured by this method.—F. H. Co. (High Grade Mirrors).

Striping Tool Wanted

We saw in the issue of February, on page 24, a lightning utility striper that looks interesting for use in connection with striping the routing on panels of wood cribs. Will you kindly give any information that you have, or refer us to the manufacturers of the article?—R. J. Co. (Metal Furniture).

We notice in February issue, page 16, that you make some reference to striping equipment. We are interested in some equipment to stripe refrigerators. We want to make a rather fine line, something under 1/16-in. Any information you can give us will be appreciated.

We notice on page 24 that you show a striping device. We will be glad to have some information in regard to this outfit, if you will be good enough to give us their address, or ask them to send us information. —T. Mfg. Co.

Machinery Enamel

If we had the name of "O. Machinery Co.," mentioned on page 6 of February number, we would be pleased to submit to them a sample of machinery enamel which will withstand alkali washing compounds.—The Graves Co.

In February issue, page 6, you refer to our Trynite Remover under "Anti-Rust Coating." Will you kindly send us the name of the machinery company interested in this product, as we would like to send them full information?—The Excelsior Varnish Works, Inc.

"Bake-M-On" Heater

I have just been reading about the "Bake-M-On" electric heater illustrated in February issue, page 20, and would be pleased if you would either give us the name of the manufacturer, or full information regarding this, together with prices, etc.—L. S. W. (Modern Tools).

Galvanized Treatment

We are very much interested in the letter quoted in part under your column headed "Letters from Readers of INDUSTRIAL FINISHING," having to do with the treatment of galvanized sheets for paint. (See page 4, February issue). If you will be good enough to send us the name and address of the company making this inquiry, we shall be glad to appraise them of the merits of "Litho-

HILO

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Air Drying and Baking

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Hilo offers you in our Standard Colors many attractive shades of Blues, Reds, Yellows, Greens, etc., and can make any special color desired.

Hilo Colored Enamels are available in air drying and in baking materials, in goods for application by spraying, dipping, brushing or tumbling.

On hard, smooth, non-porous surfaces the pleasing finish of Hilo Enamels is obtained in most colors in one coat; on somewhat porous surfaces, or where greater fullness is desired, a suitable Undercoat and one or two coats of Enamel may be used.

You may have free on request, charts showing Hilo Colors, and the helpful suggestions of our Hilo Better-The-Finish Laboratory on any of your finishing problems.

Send for free Hilo Sheepskin
(Handy in the Finishing Room)

HILO VARNISH CORPORATION

HILO

"70 Years Experience
Better-The-Finish"
42-60 Stewart Ave., Brooklyn, N. Y.
Chicago — Boston — Philadelphia

Varnishes Enamels Japans Lacquers

form." It is quite evident that the material they refer to is not our "Lithoform," else they would have no objection to the matter of price. —American Chemical Paint Co.

Wants "Lazybones" Lounging Chair

Will you please give me the name of the manufacturer of the furniture shown on page 9 (February) of your publication, INDUSTRIAL FINISHING? I am desirous of obtaining something of this design of furniture for use in a mountain cottage.—W. H. V. (President of Mfg. & Supply Co.)

Editor's Note: This chair is a product of the H. C. White Co., North Bennington, Vt.

Bowling Pin Lacquer

I notice in February issue, page 4, D. H. W. would like to know how to get some good bowling pin lacquer. He can get some by writing to the ..... Co. and asking for Bowling Pin Lacquer XE460 and XE51. The pin must be thoroughly cleaned first. Then mix a little of the XE51 to the XE460 until the desired shade is obtained. Then dip the pins. After the pins have dried, polish them on a buffing wheel and you will get a nice looking job. You can save material if you dip rather than spray the pins. We have reconditioned old pins and made them look like new. —H. D. R. (Supt.)

Tilted Tumbling Barrel

In the February issue of INDUSTRIAL FINISHING, on page 35, is listed a tumbling barrel. We would like very much to have the name of the manufacturer of this equipment so that we may get a price on same.—P. G. F. Co. (Toys).

Roller Coating Machine

In February issue of INDUSTRIAL FINISHING, (pages 45 and 46) we noticed an inquiry by S. N. B. (Awnings and Shades), with regard to a roller coating machine for painting venetian blind slats. We have developed a roller coating machine for this purpose. As yet, we have no literature describing the machine; however, we have a machine which we can demonstrate.

Our machine coats four sides in one operation. The thickness of the coat to be applied can be adjusted from a very light coat to a very heavy one. At present, we are building a machine which will have an automatic feed, handling any length slat up to 10-ft. It can be set to feed continuously or, by means of a lever at the front of the machine, one slat at a time can be fed through . . . .—Gasway Corp.

On page 45 . . . . there is listed an inquiry for a blind-slat roller coating machine. This is to advise that we have three of these coating machines on hand, which at the present time are not required for our use, having been used in the manufacture of toys. If you will give us the address of the S. N. B. Co., we will be glad to submit all information and price of these machines. If consistent, it might be well to list our name in your next issue as having equipment of this kind, as no doubt some one in the manufacture of items which can be coated, could use these to good advantage.—G. H. Co. (Toy Blocks.)

Transparent Mirrors

Editor's Note: The inquiry on page 6 of February issue, under the above title, brought replies from three concerns who can furnish "transparent mirrors," about which one company offers the following remarks:

"The term is slightly misleading inasmuch as the mirrors are not perfectly transparent. The process is merely to silver the glass with a much-diluted, silver-nitrate solution which gives an exceptionally thin coat of silver on the glass. No shellac or paint is applied; the mirror is backed up with an ordinary piece of clear glass.

"When the finished product is held up to the light, it is perfectly possible to see through the mirror, although the detail is not as clear as through clear glass. It is also necessary that they be looked through from a darkened room into either a lighted room or the outside which is light.

"There is very little demand for this commodity and we do not have any descriptive circular on it."—Rockford Plate & Window Glass Co.

Error in Rapid Coater Write-up

When I read the article about the "Rapid Coater," on page 19 of February issue, I started to laugh and have not got over it yet. I have

(Continued on page 52)

Finish Foundation for Bare and Plated Steel

(Metal Cleaning; Rust Prevention; Metal Priming)

by George A. Endom
Brewster Aeronautical Corporation

The following data is the result of several years of practical shop experimenting on Military Service Aircraft, with a view to eventually arriving at a point where the manufacturer of airplanes and airplane parts could be reasonably sure the product delivered would have a finish able to withstand the severe stress of service.

However, the commercial finisher may find a few points to his advantage by adapting the principle and disregarding any tedious detail or superfluous care not needed on his particular product. I proceed with the hope that readers will profit by this and subsequent articles on metal painting and "trouble shooting" in this connection.

George A Endom.

IN APPROACHING all metal painting it is well to remember: "A finish is no better than its foundation." To prepare a proper foundation, let us first consider our problem and review the causes of poor adhesion and rusting under finish coats.

There are in the main two types of rust—active and inert. Active rust can be rendered inert by proper cleaning. Inert rust must be cleaned thoroughly to remove all foreign matter detrimental to paint adhesion, or, while the rusting cycle will be stopped temporarily, flaking of paint film will result, allowing the surface to start rusting again due to exposure to the atmosphere.

Also, there are roughly two conditions in which bare steel is delivered for final paint: a) warehouse stock, castings and welded parts and various other fabricated items usually free from rust but covered with oil, grease or various acids which are ready to start the rust cycle — acids, forming iron chloride by being changed to hydrated oxide when acted upon by the air or, if only oil and grease, by forming a film between paint and surface preventing true ad-

hesion. b) Old stock which has already started a rust cycle and must be treated to render the rust inert.

What the Cleaner Must Do

In the case of unrusted steel the cleaner should:

1) Remove oil, grease, dirt and alkalies and destroy their paint shedding actions so that the entire surface is clean.

2) Produce a surface to which the primer, when properly applied, will adhere tightly.

In the case of rusted steel the cleaner should remove the rust and penetrate into the pitted surfaces to destroy all rusters and stop the rust cycle without leaving a chemical residue which would prevent adhesion of the primer.

The cleaner in every instance must remove all pickling (sulphuric) acids and its removing acid (muriatic), as at times traces of both are found on new mill stock. This is highly important as these acids are dangerous rust formers.

Remember, dirt of any kind prevents true sealing of the surface by the primer and allows air to penetrate to the bare metal.

Considering the foregoing, the writer has experimented and tested the following methods of cleaning:

1) SANDBLASTING. At first this seemed an ideal method of thoroughly removing heat and rust scale, and it also abraded the surface sufficiently to give "tooth" for the primer. After lightly sandblasting sheet stock, tubing, fittings, etc., the material was washed in various cleaning solvents and primed.

Here are some of the troubles encountered: a) Sandblasting tends to buckle large thin sheets and unless a careful and conscientious operator performs this work, sandblasting may be harmful by cutting too deep, especially on thin-wall tubing. b) Unless proper equipment is available and a considerable amount of work is in process, it is exceedingly costly. c) The third and worst result of this method is that in humid weather, rust is immediately formed in the pits left by the sand granules and it is almost impossible to remove this rust without chemically cleaning the surface.

Though sandblasting is still extensively used on steel parts for aircraft, I have seen many samples of unplated steel parts, cleaned by this method, form rust under both lacquer and oil-base finishes.

2) WASHING. Some of the many liquids used in washing metals in an attempt to clean the surface include: hot water, cold water, ammonia, mineral spirits; alcohol of various kinds; turpentine; stale beer and other malt solutions; alkalies and various mixtures of same; many chemical cleaners, etc.

All the above listed items were tried as cleaners. All of them cleaned to a certain extent. Some, such as mineral spirits, turpentine, and two chemical cleaners removed oil and grease and dirt, but they did not remove or neutralize acids sufficiently to give assurance of permanent paint adhesion.

All malt solutions were definitely discarded as "home remedies." Alcohol alone was little better than nothing at all.

Alkaline solutions seemed very

good; they removed oil, grease and dirt, neutralized the acids and, while the process seemed slow, the surfaces appeared to be in a very clean condition.

Trouble soon developed in attempting to use a strong alkaline wash for surfaces to be enameled. Enamel started to peel off in sheets. On the enamel film at times, spots and specks appeared in uniform and irregular places.

The primer and enamel formulas were checked and found to be of regular standard.

It was discovered that although the parts cleaned in the alkaline solution were subjected to a hot water bath and baked dry, there remained in the "pores" of the metal a slight alkaline residue sufficient to form an invisible wall between metal surface and primer.

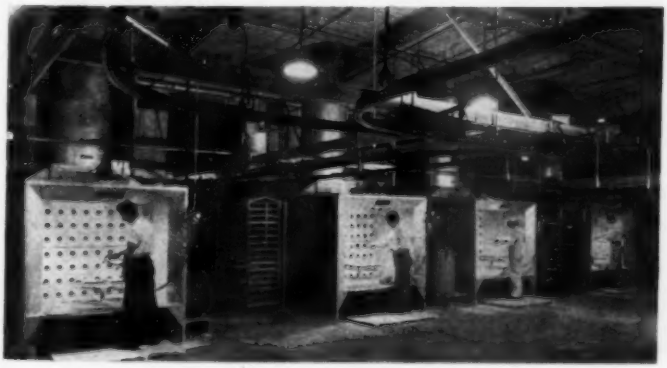
Finally two cleaners were chosen that gave reasonable assurance of a chemically and mechanically clean surface. Used in the following manner, satisfactory results should be obtained in nearly all cases.

Editor's Note: In the next installment of this article the author explains in detail how he uses the cleaning solutions which he found most satisfactory, what type of priming and finishing coats he used to cover the cleaned steel surfaces, and reveals the results of certain severe exposure tests employed to show the effectiveness of the metal cleaning and the durability of finish coatings.

Noiseless lawn mowers in new streamlined designs make their bow this year. Standard colors are: all aluminum, green and aluminum, red and aluminum.

Water-Wash Booth Installation

The accompanying illustration shows part of an impressive battery of ten water-wash, reclaiming-type booths, six of them equipped with special conveyor systems to handle a volume production of the famous Hotpoint stoves, has been recently put into operation by the Edison General Electric Appliance Co. of Chicago, Ill. These booths satisfy health authorities by reducing the amount of enamel dust discharged on the air to a minimum, and they save, according to actual figures worked out by Hotpoint engineers, more than $17,000 in a single year in enamel reclaimed. The water wash feature has reduced the enamel loss from 18.6% to 2.2% according to figures compiled on the same installation. Binks Mfg. Co. of Chicago are the engineers and makers of the new type booths.

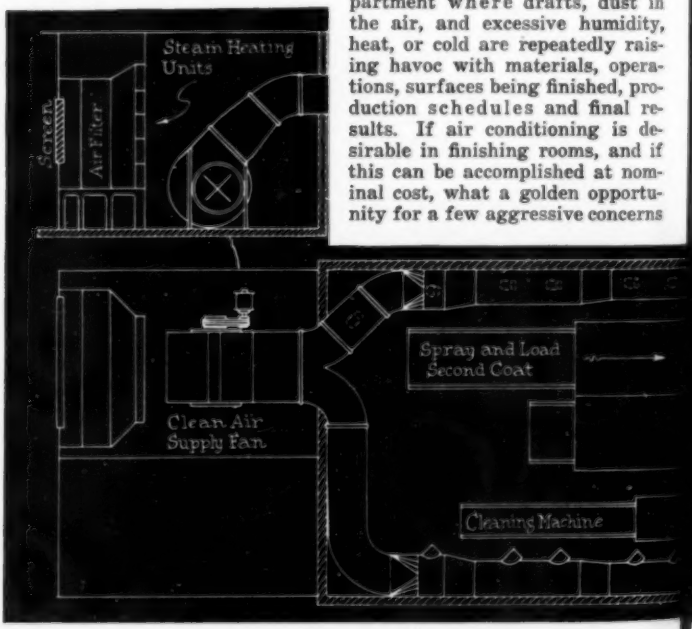


« « Air Conditioned

When? Why?

MOST OF US have some idea as to what air conditioning means. In the air conditioned theaters, department stores, public buildings and new railway trains, we feel pleasantly comfortable regardless of what the atmospheric conditions are outside. Temperatures and humidity are just right and this condition is maintained uniformly throughout the air-conditioned area. The air is clean and invigorating—it is washed air free from dust or bad odors, and completely changed every few minutes; no drafts; no spaces too warm or too cold or too dry or too damp.

What an ideal set-up this would be for any industrial finishing department where drafts, dust in the air, and excessive humidity, heat, or cold are repeatedly raising havoc with materials, operations, surfaces being finished, production schedules and final results. If air conditioning is desirable in finishing rooms, and if this can be accomplished at nominal cost, what a golden opportunity for a few aggressive concerns



Finishing Rooms? » »

Where? How?

to begin specializing in the sale and installation of this type of equipment. It is simply an engineering problem wherein proper use can be made of apparatus and instruments which are now on the market and which are readily available to anyone.

More than 15,000 finishing rooms, operating without adequate air control, can be listed as possible prospects. If only one tenth of them can be sold on the idea within the next two years, it will mean more than enough profitable jobs to sustain three or four small concerns that may elect to go after this business. Obviously it is a job for firms that are already familiar with contacting, surveying, selling and installing special engineering jobs in industrial establishments. It ought to be attractive business because it offers a highly important department in several different industries with what it has always needed in order to secure the most satisfactory production results.

To obtain some first-hand uptodate information on what experienced men think of the prospect of air conditioning finishing depart-

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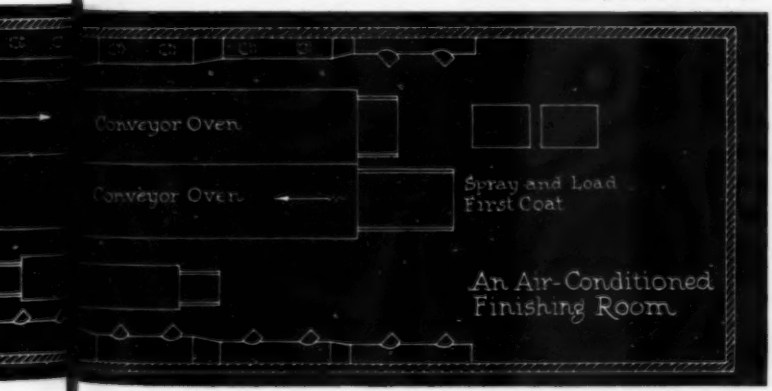
The illustration extending across these two pages shows a floor plan layout of the Harrison Radiator Corporation's finishing room; ovens and air-conditioning equipment were installed by the Swartwout Oven Division of The Foundry Equipment Co., Cleveland, Ohio. Photographic views of equipment in the room appear on following pages.

All illustrations in this article were furnished through courtesy of The Foundry Equipment Co.



ments, the editor sent out about 50 questionnaires to key men who have long experience with, and intimate knowledge of, all conditions and phases of activity in the finishing of industrial products. Some of them are or have been

Part of the fan and steam heating coils which are used for moving and heating clean fresh air, drawn into the building through air filters.

foremen finishers in furniture factories; some have experience as foremen or superintendents in establishments making other wood and metal products, including automobiles. Some are finish manufacturers' representatives who call on the industrial trade; others are independent professional men having a thorough knowledge of finishing departments in one or more industries. All of them are men who do independent thinking.

Taken as a whole, the men who answered the editor's questionnaire represent a fairly typical cross-section of modern knowledge and practical experience in actual product finishing in all parts of the United States. Their answers are interesting and informative to all finishers and finishing foremen, to executives in concerns that do finishing, to finishing material and equipment manufacturers, and to a few wide-awake concerns that can see here an opportunity to get into something that is part of a sure "upswing" industry with far-reaching possibilities. It will mean selling and supplying a virgin field of well-rated manufacturing establishments that are now getting along with non-air-conditioned finishing rooms.

Supplementing the suggestions, experiences and facts that have accumulated in response to the editor's questionnaire, several articles have been prepared especially for INDUSTRIAL FINISHING, on this timely subject. Some came from men who received questionnaires, while others were written by engineers of concerns to whom the editor wrote for photographs, drawings and engineering data, therefore this series of articles will reveal an immense amount of practical and engineering information, with examples illustrating a number of modern air-conditioned finishing rooms.

QUESTION No. 1 in the questionnaire:

Do you believe that rooms in the modern finishing department should be air-conditioned; that is, so equipped that the temperature, humidity (moisture content) and rate of air circulation will be under control all the time, regardless of the time of day or time of year?

"Yes!" is the answer from the majority. No one says "No."

The metal cleaning machine and continuous conveyor ovens—both equipped with exhaust piping.

Some of the comments on this question are as follows:

A) "Generally speaking, I think that all finishing rooms should be air conditioned, although the need for air conditioning is much greater in some lines than others."

B) "Depends on local climate and type of finish material being used."

C) "This is ideal but not essential for all finishing. Baking materials in particular do not require humidity control. Humidity control is desirable for clear and colored lacquers and for clear varnishes and shellac. Cleanliness is desirable for all finishing. Heat control is desirable to the extent that all finishing materials—baked or air dried—level out better in a temperature of 60°F. to 100°F. Colder weather or lower temperature is never desirable. With many materials, higher temperatures are permissible but not desirable. Air drying materials, regardless of their nature, do not dry properly in temperatures under 70°F."

D) "There is not a doubt but what air-conditioning—that is, fixing the mean temperature to a specific requirement, reducing the point of excessive moisture, and washing the air so it doesn't carry dust particles and foreign substances—would be a great advantage in obtaining first class fininshes and eliminating many constant aggravations now existing due to varying climatic conditions. It would reduce: 1) lack of uniformity in lacquer films, such as perfect flow-out; 2) lack of sharp luster at times; and 3) occasional blushing difficulties. In the case of synthetics, a great deal of trouble in summer (such as frequent wrinkling) would disappear. But I do not believe that the average plant is sufficiently well equipped with the type of building required to put in a really efficiently air-conditioning outfit, and probably the management would be unwilling to go to the expense necessary for its installation and its cost of upkeep. The use of forced drying systems are lower in cost . . . ."

In addition to saying "Yes," to

question No. 1, a practical finisher of metal parts says:

E) "I have worked for this (air-conditioning) for several years, but it seems to be a case of, 'Why spend the money? The job looks good enough'. I have written several times about the effect of humidity on lacquer. Most of this trouble can be laid to the weather and not to the lacquer. Also, I believe—not only believe but know—that a finishing room should be kept at a certain temperature between 72°F. and 80°F."

F) "Yes, to obtain best results this department should be air conditioned. Many of the troubles and problems of the finishing room, such as whether the stain, filler or lacquer coats will be dry enough to receive the next coat of finish at a given time, are due to uncontrolled air conditions. This could be avoided, and possibly entirely eliminated if the necessity and convenience of an air-conditioned finishing room were better understood by those whose duty it it to get finished goods ready for delivery according to schedule, or fill promises to customers whose good will every good business man is so anxious to retain in these days of keen competition."

No. 2. Do you think finishing foremen in general would prefer air-conditioned rooms?

Again the majority of answers are "Yes." Some qualify their answers, however, as for example:

A) "They have everything to gain and nothing to lose—unless the conditioning plant is so costly to operate that it will affect their production costs. Usually the foreman is not greatly concerned with installation cost nor upkeep and depreciation."

B) "Finishing foremen who understand their business do, but there are a group of foremen .... slave drivers only, who don't dare ask for improvements, and don't understand the necessary chemical requirements of the materials they use."

C) "Any first-class finisher who understands an air-conditioned finishing room would much prefer same, as he knows he could get a better finish."

D) "I firmly believe that 90% of the present day foremen finishers would welcome air-conditioning."

E) "I think any finisher who knows his stuff would advocate an air-conditioned room, not only during working hours, but on Sundays, and off days as well. Here

Spray booths and ovens appear at left. The pipe line outlets above release clean air which has been properly conditioned as to temperature and humidity. Another pipe line for distributing conditioned air is located on the opposite side of the room.

is something that actually happened to me: Most of our work was dipping. Everything went rosy—after the dip tank got warm. The room was allowed to cool over night and on Sundays and holidays. What happened? A nice gooey dip that did not warm up until the afternoon. The material would not flow out. If we thinned it—when the coated parts were put in the oven—all we had was a good coat of thinner on the work. If we did not thin it, the material would be so heavy that after it was put in the oven and warmed up, it would run and sags would show. This in itself is dangerous, as the surplus runs off, and if it hits the burners there is a fire. There was a $20,000 affair of this kind in a place here a few years ago. I warned them about it several times but 'it never happened before', they said. Anyhow it 'happened'."

No. 3—What about the management or officials of the average factory? Do you think they could be made to realize or appreciate the advantages of an air-conditioned finishing room?

Some say yes; a few say no; others believe the management could be sold on the idea if executives understood something about the chemistry of the finishing materials used, how adverse air conditions affect them, and what troubles happen in non-air-conditioned finishing rooms.

Some of the answers and comments are as follows:

A) "In some cases, particularly where a fine finish is demanded and where production is on a large scale. In such plants it is more desirable to take extra precautions to prevent dirty work. It is also more important to be able to have finishing materials work in the same way at all times. Too often the operator is not well enough acquainted with finishing materials to know how to alter them for varying conditions. If he is working on a piecework basis he may not take the time to appeal to his foreman for help. In smaller plants a more experienced man is usually employed, as he must be able to do his work with no one to appeal to for advice."

B) "The management of most progressive concerns does realize the importance of well 'ventilated' finishing rooms. This does not mean air conditioned. It seems as though quite a few, knowing the expense would be too heavy at present, also labor under the complex: 'George did a good job without it ever since he was with us' . . . ."

C) "Hardly—because of the greatly added expense."

D) "The management or officials of the average factory, in the near future, will realize and appreciate the advantage of having air-conditioned finishing rooms."

E) "This would take a good salesman and one who understands all the details. Even then he'd have a hard job. It would be easier to sell them new office equipment—easy chairs, an open fireplace, even lace curtains—than to sell them modern finishing room equipment."

F) "After the proper presentation of the advantages of air-conditioning, I doubt if any management or officials could turn it down."

G) "I think it would be a rather difficult job to convince the factory officials of the need for air-conditioning because it is fairly expensive to install and maintain,

although in some lines it is almost a necessity and will pay for itself in improved working conditions and product very shortly."

H) "Yes, if they had to work in a room with improper ventilation they would soon realize the advantage."

I) "The trouble is so many [woodworking] plants have their finishing rooms connecting with their cabinet room, and there is always a lot of traffic from the cabinet room to the finishing room. Where a plant has the finishing room off to itself, as it should be, I don't think it would take much to convince them."

J) "Yes, if the output per man is thus appreciably increased; or if shutdowns and interruptions to regular production are thus avoided; and if poor finish jobs, caused by improper humidity and excessively dusty air, are thus eliminated."

K) "The average manager or executive of an industrial plant today is ever on the alert for new and practical ideas and inventions, which speed up production and take guess work out of the scheme of things, and which will safeguard schedules and insure the fulfilling of promises made to valued customers. No manager or official can afford to consider lightly an invention or system, which his competitors may seize upon, thereby placing his firm under a serious handicap in the struggle for business."

(To be continued next month)

Describes and Illustrates Filing and Mailing Panels

R. P. Cargille, 118 Liberty St., New York, N. Y., is sending out new leaflets which describe and illustrate his filing and mailing panels for paint, varnish, lacquer and color laboratories and finishing shops. The metal panels described are intended to be coated by the user and then inserted in 3x5-in. slotted cards on which complete data is then marked in reference to the coatings used on the panels. The heavy paper cards, each holding a metal panel, are then ready to be filed in a regular card file, or mailed out.

Beugler Granted Patent on Striper

According to a news release by the Beugler Mfg. Co. (striping tools) 4318 W. 2nd St., Los Angeles, Calif., a recent and exceedingly important United States patent has been granted on the Beugler striper, issued under U. S. Patent No. 1,988,710. The popularity attained by this convenient striper is chiefly due to its adaptability to almost all types of striping; difficult, curved moldings, small-radius turns, routings, beads, etc. All these are extremely easy to stripe with this tool.

The technical staff of Beugler Mfg. Co. has been engaged for the past two years in developing striper wheels of various sizes and of special shape and design. Besides the eight standard-size striper wheels, Beugler engineers will advise and design wheels for all striping problems.

Among the unique features of the Beugler patent is the construction of the striper wheel head, which is designed to use any standard striping material without dripping or clogging while in service. The feed is entirely automatic, no adjustment being required.

Finishing the Surfaces of - - -

Leather, Paper and Fabric

by R. J. Fairburn
Zapon-Brevolite Lacquer Co.

More finishing and decorative materials and art work are being used to dress up the surfaces of products made of leather, paper and fabrics for various modern purposes. This work calls for special technic in the development and use of materials and equipment for the application and final treatment of these coatings.

LEATHER is finished by the tanneries in such a variety of finishes and is used for so many purposes that we can not hope to cover the subject fully in this article. So far as industrial finishing is concerned, decorative coatings are about all that are encountered. For this purpose very flexible pyroxylin lacquers are made. Some are pigmented materials, such as those used on women's shoes and hand bags. Others are clear gloss or flat lacquers, usually used to protect other decorative coatings. Then there are metallic bronzes in flexible bronzing lacquers.

For the most part, these lacquers are applied by spraying, although in special cases they are applied by coating machine, scraper knife and silk screen. In some cases, as in refinishing shoes or leather upholstery, they are applied by brushing.

Finishing Fabrics

In finishing duck or other fabrics, such as those used for awnings, camp chairs and tents, a typical method is to run the fabric through a special coating machine where it is striped in one or more colors. The color is usually an oil-base material in paste form, made especially for this purpose. After striping, the cloth air dries. This is usually a rather slow process, but to accelerate the drying too much, is to court brittleness with resultant cracking and peeling.

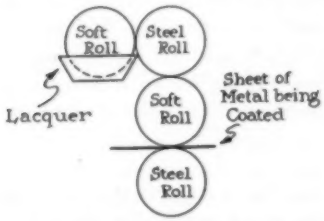
The next operation is to apply one or two coats of a clear, gloss, flexible lacquer. This waterproofs and seals the duck, and also protects the striping material, bringing out in greater intensity the color used for striping. Application is by squeegee or a blunt knife, which insures a uniform coating.

Lettering and decoration are done by the silk screen process. Colors used should have a gloss, and they must be flexible and weather resistant. Regular tire-cover colors are suited to this work.

Leather Cloth

Artificial leather manufacture hardly comes under the heading of industrial finishing, as it is a specialized process of manufacturing. It is interesting to know something about its make up, however, as this has an effect on the finishing.

A proper grade of duck or other fabric is brought into the leather-cloth factory in rolls. These are



Cross-sectional diagram of typical arrangement of rollers in a coating machine for spreading lacquer, varnish or enamel onto flat sheets of leather, fabric or paper.

placed in a special machine where they are unwound and given a coating of pyroxylin dope. Two to four coats are required for most grades. This dope is in colors, including bronzes. Coating is accomplished by means of a blunt knife which spreads the dope evenly as the sheet of material passes under it. After being coated, the work goes through a chamber where heat and a rapid change of air accelerate drying. It is then rewound into a roll. For some purposes, it is embossed in imitation of leather or in some other design.

Since artificial leather is coated with pyroxylin dopes, it is readily softened by ordinary lacquer solvents. If decorative lacquer coatings are applied, this is an asset, as the lacquer softens the leather cloth and obtains a firm bond with it.

Cover Stock for Books

As an example of finishing artificial leather, we might follow it through a plant making cover stock. For this purpose the leather cloth is not embossed. This is not always so but in this particular case it is plain.

The cloth is cut to size and pasted onto chip board (cardboard). It is then embossed in imitation of leather. At the same time the title and a design are included in this embossing operation. Finishing then proceeds as follows:

1) A coat of colored lacquer or bronze is sprayed through a mask on the raised lettering and design. If more than one color is used, a mask must be provided for each color. These masks are usually made with the same die as that used for embossing the cover. It is then cut out and held in place over the cover during the spraying operation.

2) A coat of clear lacquer is sprayed through the same mask, to protect the color coat.

3) The mask is removed and the entire cover given a spray coat of colored lacquer or bronze. In some cases color in japan is preferred for this operation.

4) The entire cover is then wiped lightly with a cloth pad that has been moistened with solvent. This removes the last color coat from all raised or embossed places and permits it to show only in the hollows, giving a two-toned effect to the entire cover and providing a shaded background for the title and design.

There are variations of this process but this is typical.

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BERRY BROTHERS

VARNISHES - ENAMEL - LACQUERS - PAINTS
DETROIT, MICHIGAN • WALKERVILLE, ONTARIO

For cheaper cover stock, craft paper is used in place of cloth for making the artificial leather. It is then pyroxylin-coated and decorated in much the same way as leather cloth. Since cost is always an important consideration when paper is used, the surface is not always given a toning operation. The cover is embossed, and colored lacquer or bronze is then sprayed through a mask onto the design and lettering to make them stand out.

Moisture and Grease Proofing

The cardboard for cartons and paper labels, as used for butter, cheese and other food products, is often given a coating of clear lacquer to give it a richer appearance and also to make it moisture and grease proof. Since this work is done in large quantities, some automatic method of handling is employed. Belt conveyors carry the work to automatic sprays or roller-coating machines. Usually the work passes through a drying chamber after coating and comes out dry enough to be stacked. This operation is accomplished in only a few seconds, so that many thousands of pieces are coated in a day.

In the same way, a glossy, flexible lacquer is applied to such items as picture post cards to give them added richness and luster. Several lithographers use the same means of preventing offsetting (smearing) of freshly printed work, which is handled rapidly and in large quantities. In this case the work comes from the presses on a belt, passes through a drying tunnel to partially dry the ink, goes under automatic spray guns where a very thin coating of clear lacquer is applied and through another tunnel; then it is stacked. The lacquer is dry by the time the work is stacked, and it protects the still-wet ink.

Decalcomanias

There are various processes of making decalcomanias or transfers. A typical routine is as follows:

1) Paper of the proper grade is passed through a roller-coating machine where it is given a coating of clear, gloss lacquer. This lacquer is quite flexible and so made that the paper will slide off of it readily when moistened.

2) The design is then applied by silk screen. Because production is on a large scale, an automatic silk-screen machine is used. A different screen and operation are required for each color.

3) After the design is dry, the work again goes through a coating machine where it is given a coating of lacquer enamel, which provides a solid colored background for the design.

4) A coat of water soluble adhesive is then applied to the back, and the decalcomania is ready for use.

The user of the decalcomania moistens the adhesive slightly and puts it in place. The paper is then wet and slipped off. The coat of clear lacquer, first applied then becomes a clear top coat which protects the silk screen design, which had been put on backward so that it is now right side up.

Decalcomanias that are to be placed on glass and then seen through the glass—such as windshield stickers—are made in much the same way, excepting that the procedure is reversed and the decalcomania is made right side up; that is, the background is put on

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the paper and then followed with the silk screen design, and then the clear top coat. In this case the paper is gummed and adheres to the work, and remains a part of the decalcomania.

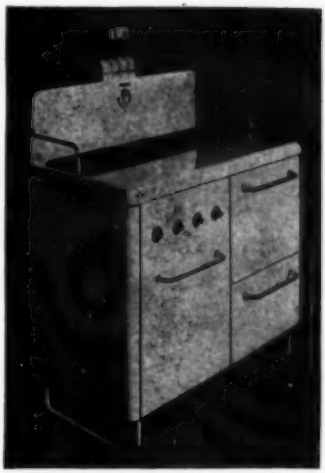
Kitchenware Colors

Red enamelware, trimmed with white or ivory, is one of the latest styles in kitchenware in New York City. The different kitchen utensils are red outside and white inside with black handles and knobs, and sometimes black edges on rims. Tea kettles and percolators are red outside and black inside. Kitchen tools, knives and other items have red handles which match the enamelware utensils. Covers, in most cases, are of chrome. The shapes of utensils are well styled and graceful. The bright red kitchenware is especially attractive for kitchens finished in blue, white, ivory or red. —BELLE CALDWELL.

Streamlined Gas Range in Colors

AN ENTIRELY different and unique interpretation of streamlined beauty is exhibited in a line of smart new gas ranges offered by Tinnerman Stove & Range Co., Cleveland, Ohio. These ranges are available in four delicate colors of porcelain enamel, each color being applicable to present kitchen decorations.

According to the manufacturer, "The thought in mind during the development of these colors was to provide something different from the ordinary drab colors found in the average gas range of today, and we believe that our efforts were in the right direction due to the sales results obtained. . . . "



A typical example in new design and color decoration.

In every detail, smooth, graceful yet simple lines are apparent and the incorporation of new and practical features gives the new streamlined model unusual sales appeal.

The tubular floor rests (adjustable to uneven floors) door handles and metal beading at joints are in chromium finish. The entire top and splasher panel are in stainless steel or monel metal. The oven is finished in blue speckled enamel, that is white specks on a field of blue.

Answers to a recent questionnaire disclose that Regent maroon, a very dark, heavy shade is preferred for motor cars this year. Dark blues rank next.

PETROLEUM NAPHTHA IS AN ESSENTIAL INGREDIENT OF PRESENT-DAY LACQUERS AND THINNERS. ITS USE PERMITS PRODUCTION OF A LACQUER OR THINNER OF ANY DESIRED QUALITY AT A LOWER COST THAN WHEN TOLUOL ALONE IS USED AS THE DILUENT.

COMMERCIAL SOLVENTS CORPORATION
TERRE HAUTE, INDIANA
Executive Offices: New York Central Building, New York, N. Y.

Stains for Wood

by P. H. Faucett
Consulting Chemist
Los Angeles, Calif.

A STAIN SHOULD BE:

1) "Fast" to light.
2) Easy to apply uniformly by spraying or brushing.
3) Non-grain raising.
4) Quick drying.
5) Non-running or bleeding.
6) Penetrating.
7) Not too costly.

■ ■ ■

A BEAUTIFUL stain is the foundation of an exquisite finish. Few stains will meet all of the above prerequisites for a stain.

1—Most staining is done with solutions of dyes, although one inventor has perfected a means of attaching the color groups to the nitrocellulose molecule of the familiar "nitro-cotton" used in lacquers. These dyes may be classed roughly according to their decreasing *fastness to light* as—water, alcohol and oil-soluble dyes. The light fastness of dyes may be tested or compared by staining wood panels and exposing them to direct sunlight or, more quickly, to an ultra violet lamp. Identical pieces of wood and like treatment should be given to each panel. Sometimes a fleeting color can be preserved by covering with an ultra-violet-resisting lacquer or paint, such as is produced by the use of glyceryl phthalate resins.

2) The water-soluble dyes have been widely used not only because of their greater light fastness, but on account of the fact that they dry slowly enough to produce an *even color without brush marks or "laps"* when so applied. They do not, however, produce as uniform a finish on some woods of uneven texture or grain as the oil or alcohol-soluble types. Alcohol and oil types can be brushed, but care must be exercised to get uniform results. Coating the wood with the solvent before staining ought to prevent rapid absorption in spots—as would also the use of high-boiling alcohol.

3) One advantage of the oil-soluble dyes is their *non-grain raising* characteristics. The alcohol-soluble types are not bad in this respect, but they do raise the grain when the air is humid enough to precipitate moisture in the alcohol solvent as it evaporates. This has been the chief defect of water-soluble dyes until the advent of new solvents such as ethylene glycol, diethylene glycol, methanal, etc. By substituting them for water, all grain raising is eliminated along with the trouble

Eye Appeal

Just as shapeliness of limb and grace of contour draw the eye to the human figure, so a distinctive eye-appealing finish on your product compels attention. A fine finish does more than attract attention. It makes an impression that carries on to consummate a sale.

Perhaps your product needs boldness, color, dash . . . perhaps a modest richness with personality and character. Our studio can be of service in creating a finish best suited to your product. Write us for details.

"No Tampering With Quality"

Rockford Varnish Co.

ROCKFORD, ILLINOIS

and expense of resanding and occasional redying in spots. Nongrain raising tests should be performed on uniform pieces of wood. The touch of the finger tips will "tell the tale."

4) For *speed of drying*, the usual alcohol solutions came first. Adding high-boiling alcohols will retard them. The oil or petroleum and aromatic solutions may be made to vary in speed by the use of solvents. The water solutions are very slow, but by substituting the new solvents, almost lacquer speed may be attained, and yet they are suitable for application by brush or spray gun. Tests for relative speed of drying should be performed on similar pieces of soft wood.

5) When stains do not stay in place but *bleed* into surface coaters they destroy grain effects and present a very ugly smeared effect. The water stains and dyes are the best in this regard, whether applied with water or the newer solvents. This property of dyes may be tested on similar pieces of even-grained wood by letting lacquer drain across the grain.

6) Until the discovery of the new water-soluble dye solvents, oil-soluble dye solutions were known to have the best *penetration* with consequent freedom from light sanding marks if touch-up work is necessary after staining. Alcohol stains were not so good in this respect and water stains were notably poor except on very porous woods. The new water soluble dye solutions are equal if not better than the old "oil" solutions. The penetration of stains may be tested by placing 1/10 cc or a drop of uniform size on similar pieces of filter paper. The penetration will be proportional to the radius of the stain.

7) As in other things the *cost per gallon* or pound will not always indicate the cost to the finisher of the stain or dye. In testing liquid stains for strength, comparison should be made on the same piece of a uniform section of wood. The amount of thinner which can be added to the stronger stain will indicate its true strength.

In testing dry dyes or stains one must remember that weight means nothing. Large percentages of colorless heavy soluble material is often added to dyes, and the relative strength can be tested only by making up and testing solutions of a certain concentration. When dissolving water-soluble dyes in the new ethylene glycol, etc., one will often find a large residue of insoluble white salt in the dissolving vessel. This does not show when water is used for a solvent. This test gives us a practical way of testing the actual amount of coloring matter in a dye.

Training School Periods for Spray Painting

The DeVilbiss Co., Toledo, Ohio, have announced their training school periods for the first half of 1935. This school is open to industrial painters, master painters, automobile refinishers, and all others interested in learning the technique of spray-painting, and the use and care of spray-painting equipment.

Each training period lasts one week. Classes will start on April 1, May 6, June 10, and July 15. These classes have been well attended in the past because of the facilities for study, otherwise unobtainable, offered by The DeVilbiss Laboratories.

It is advisable to enroll in the school as far in advance as possible, since the size of the classes must be limited, and since there will be no training periods other than those announced. Complete information may be obtained by writing The DeVilbiss Co.

ADVERTISING PAGES REMOVED

Centrifugal Finishing for Small Parts

by J. W. McHugh
Schenectady Varnish Co.

FOR MANY YEARS one of the big problems confronting certain manufacturers has been to find a satisfactory method of finishing small articles such as golf tees, hair pins and metal buttons. This work has been done by such well known methods as dipping, spraying and tumbling; but all these require considerable time and usually multiple coats, because, in most cases, the paint or varnish must be applied at a very thin body to prevent contact marks or uneven distribution.

Recently the treatment of such articles by the centrifuge* method has come into favor and is rapidly suplanting the older and slower practices. The centrifugal in industry is well known in such applications as the removal of excess water from clothes in laundries, and of oil from lathe turnings in machine shops. The centrifugals used for finishing purposes are very similar in design to those mentioned above.

Large quantities of almost any kind of a small article can be finished in a centrifugal. The list is growing rapidly with such examples as helical steel springs, hair pins, golf balls, metal buttons, shoe and buckle eyelets, and steel cable clips. Some considerable work is being done on the treatment and filling of electrical coils with varnish or thermoplastic compound.

The treatment of different products varies somewhat, but the basic process is essentially the same. The japanning of coil steel springs is a typical example.

Coil Springs an Example

Here the actual use of the machine is quite simple. The revolving container, which is removable, is partially filled with springs; japan is run into or poured into the container until it is full, and a cover is clamped on. This cover

*Centrifugal motion; whirling around a center, always with the tendency to fly outward on a tangent; more specifically, in this case, whirling the parts inside a cylindrical drum or cage rotated on a perpendicular axis.

is supported by the center spindle and is slightly smaller in diameter than the inside of the top of the container. The centrifugal, which revolves at a very high speed, is then started and run for about a minute. Due to centrifugal pressure the japan is forced through the springs and thrown out of the container between it and the cover, and caught by a collecting shell. The japan runs by gravity to a sump below and is then pumped to the storage tank above. The container is removed by an air hoist, the springs are dumped onto trays and put into the oven for baking.

Formerly, these springs were given two dip coats of japan thinned down two parts of thinner to one part of japan, with of course two handlings and two baking operations. Now the springs are finished with one coat of japan used full body. The saving in labor, time, and thinner is considerable.

Use Heavier Body Material

The varnish, japan or enamel used in a centrifugal machine is much heavier in body than if it were to be used in finishing the same articles by another process. This is necessary because a thinner material would be thrown completely off the article, due to the tremendous centrifugal force developed in the machine. With a heavy varnish, a thin, high-solids film is left on the article. It is for this reason that so few contact marks are found on the springs after they are baked.

Every job is a problem in itself, as some varnishes work much better in the centrifugal than others. There is also a minimum time for revolving the centrifugal, for with too short a time the excess of varnish is not completely thrown off. Because of the wide possible application of this method, its use will undoubtedly increase in the next few years.

Filling Wood Surfaces

FILLING is one of the most important operations in the wood finishing game. A surface properly filled gives the foundation upon which to build up a first class finish. A wood surface not properly filled and cleaned up is bound to cause trouble in the final finish; for example, a cloudy and muddy appearance, pinholes, and an uneven surface.

A high grade filler should always be used. Often an entire finish is ruined by using a so-called "cheaper" filler, which always proves to be the most expensive in the end.

Filler should be applied to the surface evenly with a brush and thoroughly worked into the pores. When it begins to set it should be wiped off crosswise of the wood grain, after which care should be used in lightly wiping the surface with the grain, freeing it from any surplus filler or muddy film. This will give a well filled and even surface for the succeeding coats. For a real job of filling I recommend the old time paste fillers that require at least 12 to 24 hours drying time.—J. E. GREENE.

Handbook for Chemists

"Filtrations in Chemical Laboratories" is the title of chemists' handbook on filtering operations, put out by Carl Schleicher & Schull Co., (filter papers of high quality since 1856) 167 E. 33rd St., New York, N. Y. The books contains 134 pages 5¼x8-in., bound between heavy paper covers.

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The New Porcelain Substitute

• One Coat Super Synthetic Enamels For Wood » For Metal Air Dry or Bake

BECAUSE of its remarkable adhesion, flexibility and heat resistance, manufacturers of refrigerators, range and stove parts, and other high grade products have, after exhaustive tests, approved and chosen **VALENITE** to replace vitreous enamels and other expensive finishes.

YET, because of its outstanding economy, manufacturers of toys, handles and novelties, whose finishing costs must necessarily be kept down to a minimum, are rapidly adopting **VALENITE** as a new standard of quality and appearance.

INDUSTRIAL VALENITE can do the same for you on almost any sprayed, dipped, or tumbled finished surface.

Write us about your finishing problems. We will gladly recommend the correct **VALENITE** to meet your exacting requirements.

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INDUSTRIAL VARNISHES — LACQUERS — ENAMELS — VALENITE

» » » » A Lower Cost Furniture Finish

by Robert Daniels

For medium and low-priced bedroom and dining room furniture. The finishing schedule includes a tinted blending lacquer coat, filling, staining, shading, highlighting, a coat of sealer, clear lacquer, rubbing and waxing. The time requirements for each operation and drying period are also given.

★ ★ ★

HERE IS A LOW-COST finishing process for dining room and bedroom furniture. It was developed to meet the demand of manufacturers of medium-priced furniture for lower cost finishing, and it has proved to be satisfactory. The finish looks well and it will stand up for several years. This process will enable many finishers to cut their production cost and to substantially reduce the time schedule for good finishing. This finish has been used for several years by one of the leading furniture manufacturers, but it has been kept more or less of a secret.

First, see that there are no deep scratches on the piece when it comes from the assembly department. You must start your finishing with a smoothly sanded surface. If there are any scratches, make sure that all of them are taken out by proper sanding with fine sandpaper. Next, spray a thin, tinted bleaching lacquer over all exposed surfaces. Just give it a fair "haze" all over.

The bleaching lacquer (tinted to give a reddish cast) is a very thin liquid and dries rapidly. It serves as a blend more than anything else, blending the natural colors of the veneers or woods together in a pleasing manner. Let the coated surface dry for about two hours. Then fill with a good colored filler especially adapted for the veneers you are using. Shade with a spray gun, using an oil—japan-naphtha shading stain. Highlight with a very fine steel-wool. Let dry for 12 to 24 hours, and follow with your regular routine of finishing.

In "gun shading," the operator uses two different shades of shading stain; one is the regular or brownish cast, and the other is a reddish cast. He uses the brown shading stain first and then does his final matching with the other shading stain. The way this is

This new **BINKS THOR** *Model 6 Spray Gun is much more efficient*

and

It's newly developed **SPRAY CONTROL** *Improves performance*

Binks now offer a new and vastly improved Touch-Up and Shading Gun—the new THOR MODEL 6. Note carefully the new adjustable spray feature! See how conveniently it is placed (just behind the nozzle head) so that it can be adjusted while the operator sprays. Built with a watchmaker's precision and with the sturdiness of a fire arm, this new Touch-Up Gun will share the success of the famous Thor Model 2. Here is the Touch-Up Gun you have been waiting for — one that solves your finishing problems in the way you hoped they would be solved. Don't delay. Test the improved performance of the Thor Model 6 on Touch-Up and Shading Jobs in your shop. Send your order today to the

Thor Model 6 Adjustable Spray, Pistol Grip Spray Gun, with Pint Cup. Gun only $18.00. Pint Cup and Att. $3.50.

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Neil C. Hurley, President J. F. Roche, Vice-President

Manufacturers of COMPLETE Spray Painting and Finishing Systems

done is for the operator and his helper to have the original sample next to them, and then match every piece as they go along. The helper assists the operator at the turntable—helps him put on and take off each piece—and while the operator is shading the piece, his helper steelwools or highlights the piece that has just been shaded. No drying time is necessary, as the shading stain dries very rapidly.

To give you a more detailed picture of this, the piece is taken off the shader's turntable and placed about 4-ft. back of the shader, or anywhere near the shader so the helper is handy and ready to help when needed. The highlighting is done with steelwool while the piece is still damp or in the act of drying. The helper just barely touches the piece with steelwool to bring out what highlighting and blending are needed.

After a piece of case goods has been highlighted, the piece is pulled away with a long iron hook, the hook reaching under the bottom rail so as to avoid getting any finger marks on exposed surfaces while being handled. The piece is allowed to stand 24 hours or over night, and is then given a coat of good sealer. The sealer is permitted to dry for about five hours, after which the surface is lightly sanded with fine sandpaper. Then follows two thorough spray coats of clear lacquer. In some cases a coat of flat lacquer is also added, and the tops and fronts are rubbed and waxed. If no flat lacquer is used, the entire piece is rubbed.

This finish will make a fairly good looking job. As for cost and drying time, I submit the accompanying detailed analysis of operations and drying intervals in the new and old processes, as applied to the finishing of an ordinary plain dresser. In this article the time given is for the necessary drying time of the materials used in both the old and new finishes.

Finishing Operations on Dresser	Time Consumed in Hours New	Old	Drying Time in Hours New	Old	Pay Basis Used per Hourly Rate*	
Staining	.01½	.15	2	12	.75	(Man and Helper)
Sanding	.00	.06	0	0	.45	
Filling	.08	.08	0	12 to 24	.55	
Shading	.07	.05	12	2	.90	(Man and Helper)
Sealer	.03	.03	4	4	.60	
Sanding	.06	.08	0	0	.50	
Spray	.03	.03	4	4	.90	(Man and Helper)
Spray	.03	.03	24	24	.90	(Man and Helper)
Rub**	.12	.12	0	0	.60	
Patch	.03	.03	0	0	.65	
TOTAL	.46½	.66	46	58 to 70	.xx	

*Hourly rate has been added to cost basis so the manufacturer can go right ahead with the schedule. Where a man and helper are designated, the two divide their piece work earnings on a 60-30 basis.

**The rubbing price is for top and fronts only when flat lacquer is used for the last coating.

Air Handling and Equipment Catalog

A new general catalog containing 36 illustrated pages 8½x11-in., bound between heavy paper covers, discloses a tremendous amount of valuable information about fans, blowers, unit heaters, unit coolers, unit conditioners, air washers and related equipment for use in industrial establishments. For free copies, write Clarage Fan Co., Kalamazoo, Mich.

ECONOMICAL COVERAGE

BY SPRAY OR DIP

UTILITY Lacquer Enamel is so concentrated that it takes nearly an equal quantity of thinner. And it is low priced to begin with.

Because of long flow, it dips without streaking on long and unusually shaped articles. Sprays without orange peel.

Covers solidly. Adheres to wood or steel. Send for chart of colors with "sales appeal."

Thinners That Cut Quickly

The line includes a thinner for every use. Each one is moderately priced. Mention requirements for quotation.

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UTILITY

LACQUER ENAMEL

Kindly mention INDUSTRIAL FINISHING when writing advertisers

What's New « «

Handy Striping Kit

The Beugler Mfg. Co., 4318 W. 2nd St., Los Angeles, Calif., has brought out a handy striping kit which contains a patented striping tool, two striping wheels of different sizes, eight carefully designed guides, and complete instructions for using the outfit.

The manufacturer realizes, as will most finishers, that many special problems arise in striping, necessitating not only various shapes and sizes of striping wheels but also a variety of guides. The Beugler striping kit, in addition to having the two wheels of different size, contains

The striping tool and all accessories and instructions are packed in a convenient, velvet-lined, leatherette case.

eight carefully designed guides and complete instructions to transform even a novice into a professional striper, with a few hours practice.

After making a thorough and lengthy survey of what is expected of a striping tool the Beugler Mfg. Co. perfected a striper to meet all the requirements.

Many questions are asked by the finishing trade as to the possibility of a mechanical striper operating in various positions and on various surfaces. These questions can be correctly answered by stating that the Beugler striper with its patented features now makes it practical to stripe in any position—either vertically, horizontally or overhead—and on any type of surface, from the hardness and smoothness of plate glass to surfaces having the texture of felt.

Water Repellant Coating for Fabrics, Paper . . .

"Waterlox Water Repellant," as announced by Waterlox, Inc., Barium Tower, Detroit, Mich., is a thin, water-white, non-staining material which has the property of moisture-proofing fiber, fabrics, paper, stucco, limestone, imported and domestic marble, as well as imitation marbles and travertines, and other like materials. It has excellent penetrative qualities and does not materially change the color of the surface to which it is applied. It does not seal porous surfaces, but rather leaves them in their natural physical condition and rejects or repels moisture through chemical reaction. The manufacturer suggests that as a treatment for the parchment or paper cones of dynamic reproducers, which must withstand humid atmospheres, its use would be ideal, as it would not greatly increase their weight which is so objectionable. It can be brushed, sprayed or used as a dipping solution.

Machine Sprays and Dries Playing Cards

Here is a new development in automatic spraying and drying equipment . . . . easily adaptable to a variety of industrial uses. In the particular case illustrated, a convey-

or type of automatic spraying and drying machine is shown in service for coating large flat sheets of uncut playing cards. The cards are fed to the machine on an endless, wire-mesh conveyor belt and, as they travel past the three automatic spray guns they are sprayed with a glossy coat of transparent finishing material.

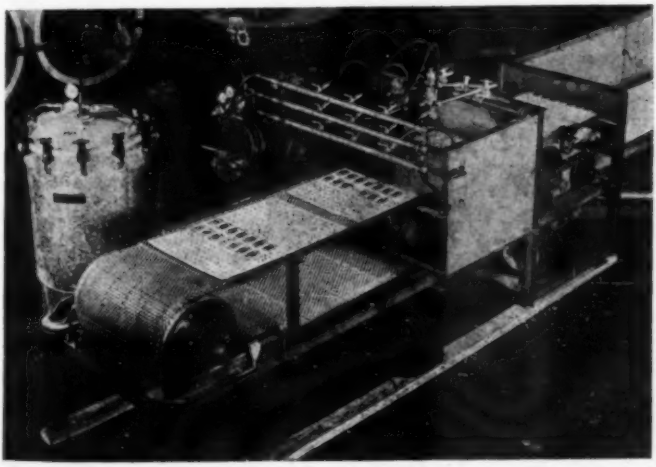
An exhaust hood (removed for shooting this picture) fits down over the spray gun chamber, and a strong suction of air pulls away the spray mist. The mesh conveyor has an adjustable speed control of 16 to 48-ft. per minute, and is belt driven by a ½-h. p. motor.

Leaving the spray conveyor, the coated cards are discharged onto an endless, canvass, drying-chamber belt which is more than 50-ft. in length. The insulated drying chamber is filled with hot air from a gas heater located at the unloading end. The heater is equipped with a ¼-h.p. electric motor blower. On reaching the unloading end, the cards are dry and ready for cutting. The same style automatic spray machine can be adapted to suit the needs of manufacturers having similar production problems.

This machine was recently designed, built and installed in a customer's factory by Binks Mfg. Co., 3105 Carroll Ave., Chicago, Ill.

Clear Waterproof Finish

Announced by Waterlox Inc., Barlum Tower, Detroit, Mich., "Waterlox Transparent" resists the action of salt water, salt acids, acid fumes, calcium chloride, extreme heat and cold. It is elastic, will not crack, chip, or peel. When dry, it possesses valuable fire-resisting qualities; is a light viscous material, practically transparent upon drying in air; has a slightly lower viscosity than the average boiled linseed oil used in paints, but is different from it in all characteristics. It is a highly processed compound consisting of polymerized organic oils, resins and certain metallic oxides; produces films which adhere tenaciously to almost



This machine automatically sprays and dries a coat of clear finish on the printed sheets of uncut playing cards.

all clean surfaces, and which possess extremely high resistance to the action of acids, alkalies and the general run of solvent materials; also is highly resistant to acid and gas fumes; will withstand temperature variations of better than 65°F. minus to 600°F. plus, and therefore may be baked to accelerate its drying when desired; is now being used as a basis or vehicle for paints, enamels, as a clear waterproofing material, and as a varnish. As an impregnating material, it has some very desirable characteristics, such as great penetration, resistance to high temperatures, coupled with great adhesion, flexibility and dielectric strength.

In the electrical industry it serves as an insulating and impregnation material for armatures, field coils, choke coils, relay coils, low frequency cables and other like apparatus. Its use in this respect, when baked on under temperatures of 200° F. to 500°F., offers a high dielectric strength coupled with extreme elasticity and tenacious adherence to the surface on which it is applied. In the radio industry, it is being used for treating field and voice coils of dynamic reproducers, resistance operating at fairly high temperatures, and as a transparent coating over nickel, chrome and other polished metal parts to prevent tarnishing and corrosion, especially under saline and humid atmospheric conditions.

A Wipe-On Finish

The Star Chemical Co., 2800 S. Crawford, Chicago, Ill., announces "an ideal brushless durable finish" in high gloss or flat, for wood or metal, which is applied simply by wiping it on with a soft cloth. According to the manufacturer, "it is not affected by hot water, hot dishes or alcoholic beverages, and will not show press marks."

"Copper Paint" Developed

Discovery of a chemical process whereby copper, 98.3% pure, is prepared in a form suitable to application in a liquid carrier, has just been announced by H. M. Rice, metallurgist and manager of the Nichols Copper Co., of Chicago, Ill., a unit of the Phelps Dodge Corporation. The process was found by two scientists after nearly eight years of persistent work in a private laboratory in Chicago, and solves a riddle that has perplexed chemists for many years, Mr. Rice said.

For the first time, so far as is known, elemental copper has been broken down into a finely powdered non-crystalline form which, when mixed with the special vehicle, yields a material not unlike liquid copper. It may be applied by spraying, dipping, or with a brush.

There are two important phases to the discovery: First, the preparation of the elemental copper in a non-crystalline form. The product is not an oxide, a bronze powder, or any similar copper substance, Mr. Rice reports, but true copper in minute, non-crystalline particles. Because of the shapeless form of the particles, they leave no minute gaps on application so that the surface is covered

with a complete armor of copper—a virtual copper shield.

The second important phase of this discovery relates to the special vehicle, the formula of which is the result of years of experimental work.

This vehicle not only holds the copper in suspension, approaching a semi-colloidal state, but when dry, it forms a perfect, non-porous seal. It completely shuts out air and moisture that cause an electrolytic action on iron and steel and other metals to which it is applied.

The use of this new liquid-like copper is not confined to metals. It also serves as an ideal coating for wood, brick, and concrete, in fact, all types of surfaces, giving it an unlimited field of uses. When used on these surfaces, it offers the same protecting qualities against the elements as on metals. A special carrier has been perfected which makes it possible to procure beautiful metallic rubbed copper effects on wood and metal and other smooth surfaces.

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Stripe Size	Wheel No.
	16
	25
	43
	73
	93

A complete striping kit . . . in velvet lined, leatherette case. Scientifically designed, precision built. Automatic feed, no adjusting required. Eight accurately designed guides make perfect striping possible in every conceivable position. No dripping, no clogging. Handles any standard striping material. Works perfectly on straight lines, curves, routings, moldings, beads and other difficult places.

The result of years of study, Beugler equipment provides a complete solution of the striping problem. For your protection and satisfaction insist on Beugler De-Luxe Striper, covered by U. S. Patent. Free consultation regarding your striping problems.

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have been made which indicate that this new liquid-like copper will have a useful life of five or ten years, or more. Its rust inhibitive qualities are excellent, and it has a very high resistance to acid and other forms of corrosion. Commercial production of the new copper is expected to be under way in the immediate future, Mr. Rice says.

Improved Mechanical Striper

An announcement from the K. H. Gettner Shop, 4210 Grand River Ave., Detroit, Mich., states that to the regular line of Gettner mechanical stripers for applying one, two and three lines to automobile bodies, wheels and hoods, there has been added the 2-color striping tool, which applies stripes of two colors simultaneously. The striping trend is toward 2-tone striping, as this seems to accentuate the effect.

In addition, special striping tools and fixtures have been developed for placing stripes of various widths on bumper guards, bumpers, louver strips, etc., these being kindred parts requiring decoration for the automobile companies.

A new type Gettner Universal Striper, with interchangeable tips for stripers of 1/32, 1/16 and 3/32-in., is now available in the sizes used by the automobile industry. The guides are adjustable to any automobile body, and easily operated by any painter in the refinishing shop.

Using the Gettner striping tool to place a 3/32-in. line on a 1935 Ford body.

Using a 2 line striping tool with fixture for striping tire covers.

Corrosion-Proof Metal Primer

For automobile collision and refinishing jobs where the prevention of rust or corrosion is more important than slightly increased cost, a new quick-drying metal primer, Berryloid Zinc Chromate Primer, has been developed by Berry Bros., Detroit, Mich. It meets the U. S. Navy specifications for a corrosion inhibiting primer for use on the metal surfaces of naval aircraft. The product adheres firmly to any metal surface, whether highly polished or rough, whether of dural, aluminum, steel, or cadmium plated.

The exceptional corrosion inhibiting qualities are due chiefly to the nature of the pigment (finely ground zinc chromate) which is carried in a vehicle consisting chiefly of synthetic resins. The resins or gums used provide greater durability than the materials in conventional oil-base or pyroxylin-base primers, being less affected by light, dampness, salt water, oil, temperature changes, and other influences which cause eventual failure of primers after varying periods of severe service. This primer is now used by several prominent airplane builders for both military and transport aircraft.

Tuluol is recommended as a thinner to reduce its consistency for spraying, or for brushing on small surfaces—one to two parts thinner being used to one part primer. Special thinner is supplied when parts

FOR 1935

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No. 1900 Cleanup Polish

The only known item that will eliminate bluish bloom or haze experienced with any ordinary rubbing oil or polish. It is miscible in water, economical. Leaves the surface clean, free from dust collecting and finger marking.

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Wood finishing materials of "Unquestionable Quality"

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C osts less than low viscosity lacquers.
E xcellent flow and coverage.
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L ong durability.
A n answer to many tough problems.
K nowledge beats guess-work.

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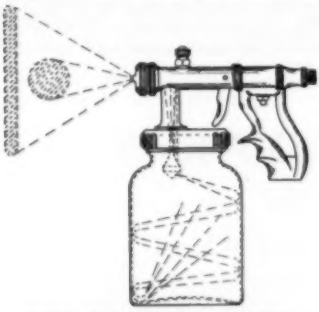
CLEVELAND, OHIO

are to be dipped. Drying is so rapid that finish coats may be sprayed over the zinc chromate primer in an emergency within a few minutes. For best results in production, a drying time of several hours is recommended in order that the coating may harden completely, or parts may be baked at temperatures up to 350°F. Properly applied, the coat is so smooth that no sanding is required.

Gun Sprays Powder

The spray gun with a small container attached, as illustrated herewith, is designed especially for spraying dry powder or granules to wet-coated surfaces, as for example, bronze powders or diamond dust to picture frames, statuary, novelties and lettering; coloring to artificial flowers; salt to crackers; sugar to



Sprays dry powder from container.

pastries and candies. It is easy to adjust and operate and is rapid and efficient in service. This kind of spray gun can also be used for spraying flock. It is a product of Paasche Airbrush Co., 1917 Diversey Parkway, Chicago, Ill.

Propellor-blade electric fans for moving air are now available in a variety of different mountings to meet practically any condition.

An Acid-Proof Stain

USING AN aniline oil stain covered with raw linseed oil to cover table tops in a chemical laboratory, it was found that it was not proof against all common reagents. Excellent results were obtained from a stain prepared from aniline hydro-chloride. This was a two-coat process, as follows:

Formula No. 1

Copper sulphate (parts)	1
Potassium chlorate	1
Water	8

Boil until salts are dissolved.

Formula No. 2

Aniline hydrochlorate (parts)	3
Water	20
or, if more readily procurable, use	
Aniline (parts)	6
Hydrochloric acid	9
Water	50

By the use of a brush, two coats of Solution No. 1 are applied while hot; the second coat is brushed on as soon as the first is dry. Then two coats of Solution No. 2 are applied, and the wood is allowed to dry thoroughly. Later, apply a coat of raw linseed oil, using a cloth instead of a brush in order to secure as thin a coat of oil as possible.—C. F. SCRIBNER.

T. J. Campbell Becomes President of Berry Brothers

T. J. Campbell, for the last four years vice-president and general manager of Berry Brothers, Detroit, Mich., was elected president and general manager at the annual meeting of the board of directors, February 18. Mr. Campbell advanced from the ranks, having been successively a Berry Brothers salesman in Brooklyn and New York City, manager of the New York branch, and then eastern district manager with territory including Atlantic Coast and neighboring states from Canada to the Gulf of Mexico. Berry Brothers have been prominent in the paint and varnish industry for 77 years and in recent years are said to have produced the greater part of lacquer and other aircraft finishing materials used by American airplane builders.

Cheap Walnut Finish

In January issue, page 6, I notice a letter of inquiry by S. & N. Co., about a "Cheap Walnut Finish," wherein the buyer insists on a nice smooth, glossy, natural walnut finish. Does he expect solid walnut or an imitation? If it is to be real walnut and is of any size, I think your buyer is asking for the impossible. In order to give him a finished product with the above qualities, made of real walnut, it will be necessary to fill the wood. Possibly this could be done by spraying a liquid filler. The question would be, could you get a smoothly filled surface to obtain the desired finish. The filler would require a sealer coat and in order to obtain a smooth surface the sealer should be sanded; next you have the spraying of a coat of gloss lacquer. With an imitation walnut I still think you have a tough proposition to furnish an item that is to retail for 10c, and have the quality finish he demands.—J. E. Greene.

Sheet Rubber Stencils?

We are interested in finding out where we can get the kind of thin sheet rubber that we understand is being used to a great extent for stencil work. As we understand it, the rubber has certain adhesive qualities and it is applied to the article to be stenciled, and after the stencil is sprayed on, the material is removed and used again.

We may be mistaken in thinking it is a rubber product. We have not seen the material but have been told about it and wonder if you can help us out in this? Possibly you have some other suggestions as to what would be suitable to use in stenciling patterns, if you can not help us out on the particular product mentioned above. We have tried cardboard and metal, but neither has been satisfactory.—E. H. Co. (Furniture.)

Questions « Answers

In reference to stencils that will adhere closely to the surface being sprayed, so you can get sharp, clean-cut edges, we do not know of any concerns using thin sheet rubber or rubberized canvas stencils, although we presume stencils made of such materials could be used. We have just been talking to one concern that uses a number of stencils. . . . They use paper stencils, which they stretch tightly to the surface and fasten down with masking tape, such as that used by automobile refinishers.—Editor.

In response to your inquiry about a sheet rubber that is to be used as a mask for spraying purposes, I am not quite certain as to just what your requirements are and what type of material you are spraying. If it is what I think you have in mind, it is not a rubber sheet or blanket but a gelatine composition similar to the material used for making printers' rollers. This is prepared by placing a layer of putty on an even steel plate, then cutting out of this putty the mold into which your gelatine solution is to be

poured. The thickness of the blanket will be governed by the thickness or amount of gelatine poured into this mold.

If you are using this to decorate furniture, why not use a silk stencil? If you will tell me just exactly what kind of work you are doing, and the purpose for which the stencil is intended, I will be glad to assist you in any way. I can also supply these stencils. . . .—Bert Zahn.

Rubbed, Polished Finish for Bar Fixtures

I am interested in obtaining a rubbed and polished finish for bar fixtures. I would appreciate it very much if you will inform me just how to proceed, what grades of pumice and rottenstone to get, and what type of polish to use.—A. E. F. (Finisher in Showcase Factory).

After you have your wood stained to the desired shade or color, and properly sanded, and the surface thoroughly dry and smooth, apply one or two coats of "sanding sealer." This can be shellac or some other good sealer material, of which there are many now on the market. (Write any advertiser of finishing materials).

If you use shellac as a sealer, I suggest thinning a "4-lb. cut shellac" 1 to 4 (one part of shellac to four parts of alcohol). You understand, of course, that the "41 lb. cut shellac" means that 4-lbs. of gum shellac have been cut (dissolved) in one gallon of alcohol. This gives you a liquid shellac, but it is too thick to use as a sealer coat; it must be thinned 1 to 4 with alcohol. This thinned shellac will be very thin, and you may need two coats, but here is where two thin coats are better than one heavier coat.

When the shellac or sealer coat is thoroughly dry it should be sanded very lightly and skillfully with No. 4/0 or 5/0 or 6/0 finishing sandpaper, and then the surface must be carefully wiped clean.

Now build up your finish with varnish or lacquer (whichever is preferred or specified). Use a varnish or lacquer that is intended for rubbing and polishing, and apply three, four or five coats. For rubbing, be sure to obtain a very fine dry pumice stone powder (grade 3/F) and run it through a fine mesh muslin sieve. Keep the rubbing pad clean and free from dust, dirt or grit. One little piece of grit or sand will ruin hours of hard work. Make your rubbing pad of several smooth layers of clean burlap or felt, and see that it has no wrinkles or folds where it is supposed to be flat.

As a lubricant for the dry pumice stone, I use regular rubbing oil mixed with clean kerosene in the proportion of 1 to 4 or 1 to 5. The kerosene helps to cut faster and, being cheaper than rubbing oil, it reduces the cost of the rubbing liquid.

I feel quite sure that you will have plenty of trouble unless you have someone in the finishing department who understands rubbing. It is very simple for one who understands the rubbing process to rub successfully, but it is a very difficult matter for anyone who has never had any experience in that line—and it is a difficult matter for me to tell you exactly how to do succesful rubbing which depends so much upon personal experience and skill.

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Larcoloid Enamels, Primers and Varnishes are used on thousands of manufactured products. They are made to air-dry in one hour or to bake at any temperature you specify—furnished in any degree of luster from flat to high gloss.

Larcoloid that is air-dried or baked, flat or high gloss, will result in a porcelain-like hardness and adhesion with exceptional resistance to heat, acids, alkalis, abrasion, salt spray, etc.

We will be glad to help you with your finishing problems. Write for descriptive circular.

Larkin Co Inc. PAINT DIVISION, Buffalo, N. Y.

Manufacturers of Primers, Enamels, Varnishes, Lacquers and Japans

PRACTICAL AUTOMOTIVE LACQUERING

A Handbook on Finishes, as applied to every metal working industry.

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- An ideal non-spotting lacquer for oxidized finish on brass or copper.

Prevents black crystal or sulphide spotting.

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The New No. 17 Crown Gun—A splendid finishing gun, with high-priced features . . at low cost. Write for full details on this new equipment.

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Whether rubbing by hand or with a machine, it is customary and correct to rub with a straight back-and-forth motion, going with the grain of the wood or generally lengthwise of the article or parts being rubbed.

Clean off all traces of pumice stone and rubbing oil, and dry the surface before beginning to polish the piece. To do real fine work apply some fine pulverized rottenstone before putting on any polish. I make what I call a "rottenstone dusting bag," using a very fine mesh of muslin and making the bag, when filled, about the size of a man's fist. I use this to dust on the fine rottenstone; then I wipe it off carefully with a soft cloth.

There are several good furniture polishes on the market, and there are many receipts in books for making your own polish. I always shake the polish in its container to mix it thoroughly before using. Then apply the polish with with a soft cloth or piece of felt that has been first slightly dempened with water, and rub the same way as with pumice stone and oil. This polishing may appear simple, but it also calls for experience and skill to produce the best results.—E. W. Bruce.

Burn-in Repairs

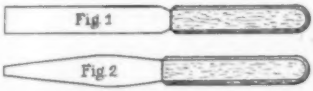
We have had trouble with our burn-in repairs raising when applying a coat of lacquer on top. How do you prevent this?—H. F. I.

There are two kinds of burning-in composition, one to be used underneath varnish and the other underneath lacquer. The one to be used underneath varnish is a

good one to use when minor repairs are to be made on the finished product. It is softer and will rub off quicker than your lacquer finish, making it possible to rub off your burning-in repair, and not harm your finished surface. The other, which is used under lacquer, is a tougher product and is used only when pieces are to be recoated.

The easiest way to tell the difference in the two products is to place the hot burning-in knife against the composition, and if it melts sort of gummy it is the softer grade; but if it melts and flows on the knife like a liquid then it is the tougher product which is to be used under lacquer.

To stop the composition you have from raising until you get the product you want, have your



patchers French polish over their burning-in repairs, using a good grade of white shellac for French polishing. The burning-in knives can be purchased at any paint or hardware store; they are called ¾-in. spatulas and are to be cut to the shape illustrated in Fig 1 or Fig. 2.—ROBERT DANIELS.

Varnish, Enamel, Lacquer Book

A new booklet beautifully illustrated and attractively printed on heavy coated paper, reveals valuable information about the properties, uses and methods of application of heat-hardenable varnishes, enamels, lacquers and self-hardening cements. The book contains 40 pages 6x9-in., bound between heavy varnished paper covers of striking design in four colors. Copies will be sent free to readers of INDUSTRIAL FINISHING. Write the Bakelite Corp., River Road, Bound Brook, N. J.

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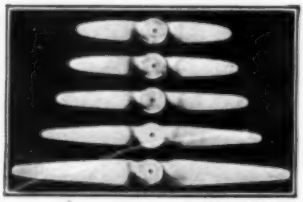

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Letters from I. F. Readers

(Continued from page 6)

seen many a mistake in print; they are usually called typographical errors so that the blame can be fastened on the type-setter. Any paint man who chances to read this article will think that it was written by Baron Munchausen. Take a look.

"Sixteen feet square," according to my old arithmetic is 156-sq. ft.; 200 sheets of that size would be equal to 51,200-sq. ft. That is equivalent to the outside surface of about 15 houses.

If the "Rapid Coater" would do that in less than half an hour—well what's the use? Believe it or not, few experienced paint men would believe nothing said about the "Rapid Coater" in this article. After I get through laughing about it, I am wondering whether or not you will get a flood of inquiries.—A. M. Parks, Parks Equipment Co.

Editor's Note: Our typewritten copy for the printer was typed incorrectly from the write-up furnished, our copy writer typing "16-ft. square, instead of one 6-sq. ft.," and it wasn't caught when we proof-read it. We're sorry, but . . . . we have referred two inquiries to you.

Rubbing Machines

Can you advise us by return mail the names of two or three reliable concerns who manufacture rubbing machines . . . . operated by electricity? This machine would be used in rubbing wood parts which have a coat of orange shellac.—S. & N. Co. (High Grade Millwork).

Cushion Machine Wanted

I am interested in securing an average-size cushion machine, used and in good condition, suitable for stuffing cushions for living room suites and similar chairs. Will you please advise me of the names of a few used-machinery dealers in or about New York or Philadelphia who might carry such an item?—C. J.

Elected V. P. of DeVilbiss Co.

W. F. Gradolph was elected Vice-President in charge of sales of The DeVilbiss Co., by the Board of Directors of that organization. Mr. Gradolph has been associated with The DeVilbiss Co. for the past 24 years.

Finishing Room Fires—VII

DURING MY experience I have witnessed some bad fires, most of which could have been prevented through proper care. Most fires are caused by carelessness. In the case of finishing room fires it is due chiefly to poor housekeeping. I have called on some companies that used large quantities of finishing materials, and have found their spray rooms or finishing rooms were in great need of a general clean up.

To give an example of what I would call a spray room that invites a fire, I will try to explain what I observed at one of these unkept spray rooms. The floor surrounding the spray booth was thick with carelessly spilled finishing materials. Dirty rags were thrown all around the place; some had been lying around for several days. The spray booth hadn't been cleaned for weeks. The spray-booth fan was loaded with materials and the spray-booth exhaust was full of the same material. At times it was necessary to break the spray booth fan loose before it could be started. Partly opened cans, some of them with spray material leaking out, were "every which way" on shelves near the spray booth. Fire extinguishers were used for coat hooks or a place to hang rags. Some of the electric light bulbs were not protected.

This type of spray room certainly invites a fire and the fire would be mighty hard to check if it ever got well started.

I witnessed a small fire one time in one of the factories. The fan had accumulated so much material that it struck the wall of

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1,200 PIECES
an Hour
Instead of 60

Just one of the many examples that show how

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Automatic Aircoating and Air-finishing Equipment is giving manufacturers finer finishes, in less time and at lower cost.

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This unit increased production from 60 to 1200 pieces an hour—used less material and gave a finer coating through evener distribution.

Over 25 years of experience have proven to us that automatic air-coating equipment can always do the job better, quicker and at a saving. Let our Engineering Department offer suggestions as to how your coating and finishing problems can be solved to your greater satisfaction. Its service is free.

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the exhaust and, either through a spark or through friction, it started a fire, mostly smoke, which was put out by one of the men who was on the job. Another fire was caused by using a large steel crow bar to cut away accumulated spray material inside a fan exhaust. The fire was more of an explosion; still it singed the hair of the operator.—J. M. VERDEROSA.

Operating the Spray Gun

EXPERIENCE is the best teacher. One may read all kinds of literature on how to properly spray an article, but this will be of no great help to him until he has had a chance to actually spray a few jobs. Such experience will teach him the various points to watch for in doing good work.

A few of the most important items the operator should become skilled in are:

1) Proper adjustment of gun.

2) Gauging the proper distance gun should be held from work.

3) Proper reduction of the material.

4) Correct air pressure to properly atomize and flow material.

5) Cleanliness.

By strict attention to these points, a good many spray finish troubles can be entirely eliminated.—J. E. GREENE.

Interviews with Salesmen Are Profitable

I FIND that in some factories the "contact personnel" feel they are doing a salesman a favor when they grant him a few minutes in which to explain his products. Occasionally they cut him

short with a snappy uncivil answer.

No purchasing agent, superintendent or foreman finisher knows it all, and very often more information can be obtained from salesmen than from any other source. The man who allows a salesman to talk longer than necessary is as much to blame as the salesman. Every salesman is entitled to a courteous interview — not necessarily from the standpoint of politeness alone, but because it is good business to do so. The average industrial finish salesman contacts a large variety of factories and is bound to absorb a great stock of knowledge, some of which possibly would be of help to any concern without injury to the company from which it came.

The average salesman knows that he cannot sell them all, but he hopes to be allowed to present his products in the most favorable manner in order to get an entree. Service is an important item, combined with the valuable information furnished, and at times it is of great help to a finishing department. Some salesmen probably carry their line of talk too far, but if they are handled properly this fault can be overcome without causing any friction. — J. E. GREENE.

"Wet & Dry" Recording and Controlling Instrument Catalog

A new illustrated booklet of valuable information dealing with instruments, devices and methods for indicating, recording and controlling temperature and humidity in industrial processes is ready for distribution by the Foxboro Co., Foxboro, Mass. The book is known as "Bulletin 188," and contains 32 coated-paper pages, size 8½x11-in., neatly stapled between heavy covers of attracive design.

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324 W. 10th St. Indianapolis, Ind.

Industrial
FINISHING

Distributed to Executives and Foremen Finishers in industrial plants where finishing coats are applied with finishing equipment

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EDITORIAL

Air Conditioning Is Coming

In this issue there is published the first of a series of interesting and informative articles about air-conditioning the finishing room. A tremendous amount of practical information about this timely subject has been uncovered and assembled, and it will appear from month to month in future issues of INDUSTRIAL FINISHING.

Investigation reveals the fact that a few concerns already have complete air-conditioned finishing rooms; a few others have what might be termed "partial air-conditioning;" but the vast majority of finishing rooms—probably 95% to 99%—are not air-conditioned.

The why, when, where and how of modern air-conditioning, as it applies to finishing rooms, will be clearly and forcibly portrayed in these articles. It's an obvious improvement that is on the way, therefore everyone having anything to do with industrial finishing or refinishing departments should study these articles carefully and keep them on file for future reference.

Business Uncertainty

"Business Uncertainty"—a prize alibi for sitting back inactive, paralyzed with fear, waiting, waiting, waiting while changes are rapidly taking place in so many lines of business. Just because the whole country is not in a highly speculative boom period of expansion, with business curves ascending the charts at 45° angles—when practically any venture would be a sure thing—some holders of business purse strings are "sitting tight, waiting for things to clear up." This exhibition of weakness among a number of concerns accounts for part of the change that is taking place. It is making golden opportunities for others who have more of the pioneer spirit of initiative, energy and adaptability to new conditions and trends.

You can easily call to mind individuals and firms who are now engaged in something entirely different from what they were doing a few years ago—and these changes are typical of what is to be found all over the country. The

so-called "Business Uncertainty" is going to continue so long as economic and political changes are taking place—which is pretty much all the time.

Every manufacturer whose business isn't what he thinks it ought to be should do some deliberate studying and investigating to learn more about why or if his enterprise is needed in the present scheme of things, and if so, how he can improve or change his products and service and publicity to better serve those with whom he wants to do business.

Product development and the use of more attractive designs and decorative effects are features to keep uppermost in mind always; and with these there must also be continuous well-directed sales efforts. Reading the trade journals carefully, and making use of all possible facilities to uncover facts in reference to styles and trends, will help every manufacturer to keep informed as to what is taking place in active business and industry.

Use Publicity; Exploit the Merits of Your Products

It will never be known just how many valuable contacts and how many dollars worth of business are lost through prospective buyers not knowing about all sources of supply for certain services, materials and equipment. We do know, however, that the amount is considerable . . . . because too many concerns are doing little or no advertising of specific products which are of timely interest to buyers. Examples of this are found in the scores of inquiry

FINISH WIT-HUMOR
PLANE FINISH
GOTTA MATCH?
SURE I GOT MATCHES TO BURN!
WHAT HAT WILL SUIT MY HEAD?
A SOFT HAT, SIR
I WRITE MY JOKES ON TISSUE PAPER—
OF IS THAT WHY THEY CALL IT LIGHT HUMOR

letters received here in the office of INDUSTRIAL FINISHING. A few of these are published in every issue of the magazine, just to show what the trade is thinking about; practically every single inquiry received is representative of what several others in the field are also interested in.

And this same buyer interest applies to the lines of business in which users of finishing materials and equipment are engaged—your line of business—everybody's line of business. What to do about it? Use more well directed publicity; exploit the names and merits of your products—not just once but repeatedly in every issue of your business magazine or trade paper. Advertise continually where you are sure to get the attention of your own and your competitor's customers and prospects. More progressive concerns are becoming interested in purchasing goods, and they would like to find what they want advertised in the latest copies of the magazines or papers they read.

Lacquer Sales Increase $5,000,000; 1934 over 1933

Throughout the year 1934 the charted curve of total lacquer sales (finished lacquer, lacquer thinners and dopes) was well above the line for 1933, according to figures and charts released on February 25, 1935 by the Bureau of Census, Department of Commerce, Washington, D. C. The total sales for 1934 amounted to more than 33⅓ million dollars; for 1933 less than 28⅓ million dollars, and for 1932, 24 1/3 million dollars. These figures are based on data reported by 102 identical manufacturers, who produce probably 85% of the total value of lacquer for the industry.

For Over 40 Years
Manufacturing Quality
GOLD and SILVER
Colored Bronze Powder
Write for Samples
The O. Hommel Co., Inc.
Pittsburgh, Pa.

Out of the Ordinary Low-Priced Class

While there is always a demand for standard goods and services "at a price," there is also a demand for special goods and service wherein the price is secondary. Many firms, prepared to cater to this type of special business, find it much more profitable and desirable than the price-class lines. For example, the bulk of inquiries that come to INDUSTRIAL FINISHING are for out-of-the-ordinary finishes, equipment and methods. Finishing materials that are unusual for their durability or resistance to severe requirements of service are in demand, as are also finishes that offer unusual decorative effects—and this applies to equipment and service, too.

Manufacturers who use finishing materials, aware of their own special requirements, will do well to investigate the probable possibility of their own customers wanting something out of the ordinary and being willing to pay more for it, or being likely to purchase it in larger quantities. Nothing is so well made now that

it can not be improved upon in utility, design or decorative treatment. The trend in manufacturing today is to make improvements or changes in present products, or replace old line goods with something decidedly new or original — something which in many instances is daringly different. Such changes immediately put the products out in front in publicity, in displays and in attention-getting value. It is something for manufacturers in every line to think about—and take action accordingly.

A new 2-quart vaporizing liquid fire extinguisher, which is discharged by air pressure and delivers a fan-shaped spray as well as a solid stream, has just been announced by the Pyrene Mfg. Co., Newark, N. J.

Man-Made Rubber Book

Under the title of "A Story of Man-Made Rubber," the first really popular description of DuPrene is given in a small illustrated booklet just issued by the Rubber Chemicals Division, E. I. du Pont de Nemours & Co., Wilmington, Del. Of particular interest is the clear and understandable explanation of how DuPrene is synthesized from such abundant natural raw materials as coal and limestone. Other phases of the general subject of the booklet include "'DuPrene' Is Processed by Rubber Machinery," "Many Kinds of DuPrene Compositions," "Costs More Than Natural Rubber," "Special Properties," "Many Industrial Applications" and "Engineering Service."

Carbon Monoxide Booklet

"Carbon Monoxide, The Killer," is the title of a new and attractive 20-page booklet which reveals clear-cut information about the deadly poison, carbon monoxide, how it affects its victim, what to do to protect and resuscitate him, and what instruments are available for detecting and recording its presence, according to various percentages. The booklet describes and illustrates automatic instruments for sounding an alarm when the percentage of carbon monoxide in the air becomes dangerous; also masks for protecting workmen against breathing carbon monoxide where it is present in the air to a dangerous degree. The contents of this valuable booklet have been carefully prepared by Mine Safety Appliances Co., Pittsburgh, Pa.—Internationally recognized as an authority on respiratory protective equipment, and manufacturer of a comprehensive line of approved carbon monoxide protective apparatus.

Classified Advertising

Advertisements under this heading 45 cents a line per insertion, minimum charge, $1.35. In estimating, calculate six words to one line, and add one additional line for heading. Use this department to obtain help, find positions, buy and sell equipment, dispose of manufacturing properties, etc.

CONNECTION DESIRED

By paint, varnish and lacquer chemist having broad experience in manufacture of industrial finishes, with organization that requires the services of thoroughly experienced man to control and maintain quality finishes at low cost. Thorough knowledge of requirements and methods of application gained by several years' experience traveling as technical service man. Address IF-549, care Industrial Finishing.

WOOD FINISHER

Desires a change. Have 21 years' experience in finishing room, 11 years in charge, with largest and most productive plant in South. Can furnish best of references. Address IF-550, care Industrial Finishing.

EXPERIENCED FIXTURE-FURNITURE FINISHING FOREMAN

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GUARANTEED GOOD AS NEW—

DeVilbiss spray guns and equipment. Why not save money?—Guns, Booths, Fans, Transformers, Parts, Repairs, Hose Connections. HOVEY SPRAY EQUIPMENT CO., 1509 Spring Garden st., Philadelphia, Pa.

Practical Japanning and Enameling

HERE is the first authoritative handbook of its kind, containing much information that has never before been published. You will find between its covers facts, processes, and formulae that have been considered secret by many japanners.

The author has actually been doing this work for others for many years and he knows whereof he speaks. No one has ever gone into the subject of metal finishing more deeply than he nor has the subject ever been explained so clearly and effectively. This book was eight years in preparation.

Color plates and a multitude of tables and illustrations make the text even more clear and understandable. The volume is bound in harmony with its companions of the Practical Finishing Series and makes a rich, attractive appearance . . . 22 chapters.

Price $3.50 . . . . *money refunded if book is not satisfactory*

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222 EAST OHIO ST.

INDIANAPOLIS, INDIANA

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